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Exploring the Link Between Food Security, Health Services, and Family Income on Wasting Incidence Among Toddlers (0-59 Months)

Menelusuri Hubungan Antara Ketahanan Pangan, Layanan Kesehatan, dan Pendapatan Keluarga dengan Kejadian Wasting pada Balita (0-59 Bulan)

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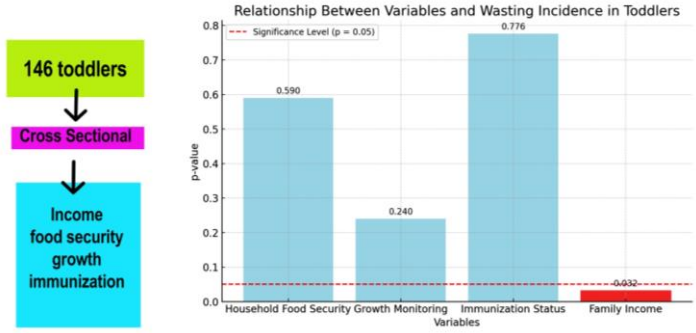
Abstract
Wasting remains a significant nutritional challenge in Indonesia. Despite a reduction in its prevalence from 10.2% in 2018 to 7.1% in 2021, the rate still falls short of the national target of 7%. This study aims to examine the relationship between health services and family income on the incidence of wasting in toddlers aged 0-59 months in the Polombangkeng Utara sub-district, Takalar district. The research employed a quantitative approach with a cross-sectional study design. The population in this study consisted of toddlers aged 0-59 months in the North Polombangkeng sub-district, with a sample size of 146 toddlers. A probability sampling technique was used. The analysis was conducted using the chi-square test. The results of the chi-square test show that household food security is not related to the incidence of wasting, with a p-value of 0.590 (>0.05). Similarly, there is no relationship between growth monitoring and the incidence of wasting, with a p-value of 0.240 (>0.05), and no relationship between the completeness of immunization status and the incidence of wasting, with a p-value of 0.776 (>0.05). However, family income does show a relationship to the incidence of wasting, with a p-value of 0.032 (<0.05). This study indicates that food security and health services do not impact the incidence of wasting. In contrast, family income, which is a primary factor in nutritional problems, does have an impact on the incidence of wasting. The issue of wasting in toddlers can be prevented and addressed through specific and sensitive nutrition interventions.

Abstrak
Wasting masih menjadi tantangan gizi yang signifikan di Indonesia. Meskipun prevalensi wasting menurun dari 10,2% pada tahun 2018 menjadi 7,1% pada tahun 2021, angka tersebut masih jauh dari target nasional sebesar 7%. Penelitian ini bertujuan untuk mengetahui hubungan antara pelayanan kesehatan dan pendapatan keluarga dengan kejadian wasting pada balita usia 0-59 bulan di Kecamatan Polombangkeng Utara, Kabupaten Takalar. Penelitian ini menggunakan pendekatan kuantitatif dengan desain penelitian cross sectional. Populasi dalam penelitian ini adalah balita usia 0-59 bulan di Kecamatan Polombangkeng Utara, dengan jumlah sampel sebanyak 146 balita. Teknik pengambilan sampel menggunakan teknik probability sampling. Analisis dilakukan dengan menggunakan uji chi-square. Hasil uji chi-square menunjukkan bahwa ketahanan pangan rumah tangga tidak berhubungan dengan kejadian wasting, dengan nilai p-value sebesar 0,590 (>0,05). Demikian pula, tidak ada hubungan antara pemantauan pertumbuhan dengan kejadian wasting, dengan nilai p-value sebesar 0,240 (>0,05), dan tidak ada hubungan antara kelengkapan status imunisasi dengan kejadian wasting, dengan nilai p-value sebesar 0,776 (>0,05). Namun, pendapatan keluarga menunjukkan adanya hubungan dengan kejadian wasting, dengan nilai p-value sebesar 0,032 (<0,05). Penelitian ini mengindikasikan bahwa ketahanan pangan dan pelayanan kesehatan tidak berpengaruh terhadap kejadian wasting. Sebaliknya, pendapatan keluarga, yang merupakan faktor utama dalam masalah gizi, berdampak pada kejadian wasting. Masalah wasting pada balita dapat dicegah dan diatasi melalui intervensi gizi yang spesifik dan sensitif.

Graphical Abstract



Keyword
cachexia; food security; health services; immunization; nutrition disorders

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INTRODUCTION

Wasting is a condition where toddlers experience acute malnutrition where their weight is not proportional to their height, i.e., z-score value <-2SD. Wasting can cause suboptimal growth of children and inhibit muscle building in children. In addition, toddlers who are wasting will have a weak immune system and cause children to be susceptible to diseases such as flu, cough, diarrhea, or more severe infectious diseases. Wasting also inhibits brain development in toddlers. This can lead to permanent disruption of brain function including reduced thinking power (Indonesian Ministry of Health, 2019).

The prevalence of wasting in toddlers in the world in 2016 is estimated at 7.7%, which is an increase based on the 2014 wasting prevalence data of 7.5% and is said to be quite high at the WHO target in 2025, which is <5%, WHO, 2016. According to Riskesdas 2018, the prevalence of underweight and very underweight toddlers in Indonesia reached 10.2% and amounted to 7.1% in 2021. This is still one of Indonesia's nutritional problems, so the government set a wasting target in the 2020-2024 RPJMN of 7% (Indonesian Ministry of Health, 2019).

The percentage of toddlers aged 0-23 months who are severely wasting is 4% and wasting is 8.3%, while in the age of 0-59 months, the category of severely wasting is 2.50% and wasting is 7.50% (Indonesian Ministry of Health, 2019). Based on the results of the Indonesian toddler nutritional status survey, especially in South Sulawesi, it shows that the prevalence of nutritional status data for children aged 0-59 months.

In South Sulawesi Province, there are 3 districts with the highest prevalence of wasting, namely Pangkajene Islands district at 11.3%, Barru district at 13.1% and Takalar district at 17.5%. Thus, Takalar district is the district with the first highest wasting prevalence rate (South Sulawesi Provincial Health Office, 2020). Meanwhile, the SSGI results in 2021 showed that the prevalence of wasting in Takalar district was 10.7%.

Based on data from the health profile of South Sulawesi, Takalar district also ranks second with the highest percentage of underweight toddlers in South Sulawesi at 10.2% (South Sulawesi Provincial Health Office, 2020). Based on data on the nutritional status of toddlers in 2019-2021 in Takalar district, it is known that the highest number of wasting is in North Polombangkeng sub-district, namely 151 children under five or around 15.8% among 17 sub-districts in Takalar district that have data on wasting toddlers. Polombangkeng sub-district itself has 5 sub-districts and 2 villages, namely with a total population of toddlers aged 0-59 of 2629 toddlers including panrannuangku village 474 toddlers, mannongkoki 476 toddlers, malewang 560 toddlers, palleko 259 toddlers, mattompodalle 362 toddlers, pa'rappunganta 328 toddlers and parang bado 170 toddlers.

Undernutrition in children is a complex public health issue influenced by a multitude of interrelated factors, both direct and indirect. The primary forms of undernutrition include stunting, wasting, and underweight, each of which has distinct yet overlapping causal pathways. Stunting, defined as low height-for-age, is particularly prevalent, affecting approximately 155 million children globally as of 2016, and is recognized as a critical indicator of children's overall well-being and social inequalities (Onís et al., 2018). The multifactorial nature of undernutrition necessitates a comprehensive understanding of its determinants, which can be categorized into immediate, underlying, and basic causes as outlined in the UNICEF conceptual framework.

Immediate causes of undernutrition primarily include inadequate dietary intake and frequent infections. Poor dietary practices, such as insufficient breastfeeding and inadequate complementary feeding, significantly contribute to nutrient deficiencies (Wendt et al., 2019). For instance, exclusive breastfeeding for the first six months has been shown to enhance immunity against infections, which are prevalent in developing countries and exacerbate undernutrition (Nwankwo et al., 2022). Infections, particularly diarrheal diseases, are known to reduce food intake and impair nutrient absorption, creating a vicious cycle that further deteriorates nutritional status (Sahiledengle et al., 2022; Manzoni et al., 2019). The bidirectional relationship between undernutrition and infections underscores the need for interventions that address both dietary practices and health care access (Jones et al., 2014).

Underlying causes of undernutrition often stem from socio-economic factors, including poverty, education, and access to health services. Studies indicate that children from poorer households are disproportionately affected by malnutrition, with socio-economic status (SES) serving as a critical determinant of nutritional outcomes (Nguyen & Nguyen, 2020; Kien et al., 2016). For example, in Vietnam, disparities in malnutrition rates were closely linked to SES, with marginalized ethnic groups experiencing higher rates of undernutrition (Nguyen & Nguyen, 2020). Furthermore, maternal education has been consistently associated with improved child nutritional status, highlighting the importance of empowering women through education and resources (Cunningham et al., 2014).

Poor sanitation and hygiene practices lead to increased morbidity from infections, particularly in young children, which can exacerbate undernutrition (Sahiledengle et al., 2022; Gimaiyo et al., 2019). In regions where open defecation is common, the burden of infections is significantly higher, contributing to nutrient deficiencies and

Table 1
The Characteristic of Toddlers

Characteristic	Frequency	Percentage (%)
Toddler Age Group		
7-23 months	61	41.8
24-59 months	85	58.2
Gender		
Male	70	47.9
Female	76	52.1
Nutrtion Status		
Wasting	82	56.2
Normal	64	45.8
Food Security		
Food Resistant	29	19.9
Medium Level Food Insecurity	117	80.1
Growth Monitoring		
Not Routine	30	20.5
Routine	116	79.5
Immunization Status		
Incomplete	17	11.6
Complete	129	88.4
Family Income		
Low Income	130	89
High Income	16	11

stunted growth (Sahiledengle, 2024). Improved WASH conditions have been shown to lower mortality rates and reduce the incidence of stunting among children (Haq et al., 2022). The purpose of this study was to see the relationship between health services and family income on the incidence of wasting in toddlers aged 0-59 months in North Polombangkeng sub-district, Takalar district.

METHODS

This type of research is quantitative research with an observational analytic approach with a cross sectional study design. This research was conducted in the north polombangkeng district of takalar district. The population in this study were toddlers aged 0-59 months who lived in the North Polombangkeng in Takalar District, namely 2629 toddlers. The sample in this study is part of the population to be studied and can represent the population. The sampling technique used is probability sampling technique or sampling technique that provides an opportunity for each member of the population to be sampled. The number of samples obtained was 146 toddlers.

Data collection methods were carried out in two ways, namely primary data and secondary data. Primary data was obtained through direct interviews and filling out questionnaires as well as in the toddler's MCH book and to determine the nutritional status of wasting toddlers by measuring the height and weight of children using multifunctional measuring instruments and digital scales. Secondary data were obtained from community health centers, health offices and literature review sources, especially previous studies related to factors causing wasting.

Data processing was carried out using scoring and categorization in each variable which was then analyzed through a computerized program, namely SPSS 22.0 to test the relationship between the dependent variable and the independent variable by using the chi-square test. Data analysis included univariate and bivariate analysis. This study has passed the ehical clearance test through the Faculty of Medicine and Health Sciences UIN Alauddin Makassar with number 342/2022.

RESULTS

Table 1 shows that of the 146 toddlers there are 85 toddlers (58.2%) who are included in the age group 24-59 months and 61 toddlers (41.8%) are in the age group 7-23 months. While in gender there are 76 toddlers (52.1%) who are female and 70 toddlers (47.9%) who are male. And there are 82 toddlers (56.2%) who have wasting nutritional

Table 2
Relationship Between Health Services, Food Security, And Family Income and The Incidence of Wasting

Variables of Services, Health, Food Security and Family Income	Wasting		Normal		P Value
	n	%	n	%	
Growth Monitoring					
Not Routine	14	46.7	16	53.3	0.240
Routine	68	58.6	48	41.4	
Immunization Status					
Incomplete	9	52.9	8	47.1	0.776
Complete	73	56.6	56	43.4	
Food Security					
Food Insecurity Level	67	57.3	50	42.7	0.590
Food Resistant	15	51.7	14	48.3	
Family Income					
Low Income	69	53.1	61	46.9	0.032*
High Income	13	81.3	3	18.8	

*Note: *=significant (P<0.05); analyzed by using the chi-square test*

status and 64 toddlers (43.8%) whose nutritional status is normal.

Table 1 illustrates that out of 146 households, 117 households (80.1) are categorized as moderately food insecure, 29 households (19.9%) are food secure, there are 116 toddlers (79.5%) who routinely conduct growth monitoring, 30 toddlers (20.5%) who are in the non-routine category. There are 129 toddlers (88.4%) who have complete immunization status, 17 toddlers (11.6%) have incomplete immunization status, and there are 130 households (89.0%) that fall into the low-income category and 16 households (11.0%) have high income.

Table 2 shows that the variable that has a relationship with the incidence of wasting is family income based on the results of the chi-square test conducted obtained a p-value <0.05. While variables that do not have a relationship with the incidence of wasting are growth monitoring, immunization status and food security with the results of the chi-square test conducted obtained a p-value> 0.05.

DISCUSSION

The gender in this study can be seen that of 146 toddlers. the gender of toddlers in women is 76 toddlers of which there are 34 toddlers (41.5%) who are wasting and 42 normal (65.7%). and the gender of toddlers is male as many as 70 toddlers of which there are 48 toddlers (58.5%) wasting and 22 toddlers (34.3%) normal. This shows that toddlers with male gender are more dominant in the incidence of wasting compared to women.

This study is divided into 2 age groupings, namely 7-23 months and 24-59 months. So, it can be seen that out of 146 toddlers. There were 25 wasting children in the age group of 7-23 months and 57 wasting children in the age group of 24-59 months. Meanwhile, in the normal toddlers, there are 36 children in the age group of 7-23 months and in the age group of 24-59 months only 28 normal toddlers. The average z-score value of 146 toddlers was -1.5801. The highest z-score value is 1.21 and the lowest is -2.66. this shows that wasting is dominant in the age group of 24-59 months.

Relationship Between Food Security and Wasting In Toddlers

Food is an essential need related to food security. Based on Law No. 18 of 2012, the implementation of food strengthens the food system which aims to produce quality human resources. In the refinement of the new definition of food security in (Law No. 18 of 2012) that food security is regulated from the state to the individual, the nutritional aspect gets a sufficient portion of the main regulation, and the need for spiritual food safety aspects, by adding the phrase: "not contrary to religion, beliefs, and culture of the community" (Hidayat et al., 2020; Jayatissa et al., 2021).

Based on UNICEF theory, food intake is one of the direct factors of wasting. Food needs can be influenced by economic income in a household. In addition, it is suggested that food security in a household can be seen based on the proportion of the level of expenditure on food and household energy consumption (Abdurahman et al., 2016). So that food security in a household is not a factor in the risk of wasting or other nutritional status of toddlers.

The relationship between food security and wasting in toddlers is a critical area of study, as both issues significantly impact child health and development. Wasting,

defined as low weight-for-height, is often a direct consequence of inadequate food intake and poor nutritional quality, which are closely linked to household food security. Research consistently demonstrates that food insecurity increases the risk of wasting among children, particularly toddlers.

A study conducted in Nepal found a clear association between food insecurity and the prevalence of wasting among children under five years old, with rates increasing from 9.4% in mildly food-insecure households to 11.3% in severely food-insecure households (Nepali et al., 2020). This finding aligns with other research indicating that food insecurity directly affects children's nutritional health, leading to higher rates of malnutrition, including wasting (Masthalina et al., 2021). Furthermore, the correlation between food security and nutritional status is reinforced by evidence showing that households with adequate food security are more likely to provide diverse and nutritious foods, which are essential for optimal growth and development in toddlers (Syarif, 2024).

The impact of food security on nutritional status is further illustrated by studies that highlight the role of maternal knowledge and feeding practices. Mothers who are well-informed about nutrition are more likely to provide adequate food for their children, thereby reducing the risk of wasting (Simanjuntak et al., 2019; Maulizar, 2023). Conversely, poor maternal attitudes towards food and inadequate feeding practices have been linked to higher rates of malnutrition, including wasting (Setyani & Anwar, 2022). This suggests that improving maternal education and awareness about nutrition could be a vital strategy in combating wasting in toddlers.

Moreover, the quality and quantity of food consumed by toddlers are significantly affected by the economic status of the household. Families with limited financial resources often face food insecurity, which restricts their ability to access nutritious foods (Khan et al., 2019; Rahmad et al., 2020). This economic aspect is crucial, as it not only influences food availability but also affects the overall health and nutritional status of children. For instance, a study in Indonesia indicated that economic disparities directly correlate with the prevalence of wasting, emphasizing the need for targeted interventions that address both food security and economic stability (Rahmad et al., 2020).

Relationship between growth monitoring and the incidence of wasting in toddlers

Growth monitoring in children includes physical, psychological, and social aspects. Monitoring is carried out regularly and continuously. In addition to parents, growth monitoring can also be carried out by the community through health service centre activities. This monitoring activity aims to identify any growth disorders as early as possible.

Research indicates that consistent growth monitoring is essential for identifying nutritional deficiencies and growth disorders in toddlers. For instance, a study highlighted that regular visit to public health centres for weighing and monitoring nutritional status are associated with better health outcomes for children (Ramli et al., 2022). This aligns with findings that emphasize the importance of growth monitoring as a strategy to combat malnutrition, including wasting (Bukari et al., 2019). The systematic collection of growth data allows health workers to identify at-risk children and implement necessary interventions, such as nutritional supplementation or dietary counselling (Bukit et al., 2021).

Moreover, the role of caregivers, particularly mothers, in monitoring their children's growth is pivotal. Studies have shown that maternal knowledge and engagement in growth monitoring significantly influence the nutritional status of toddlers (Susanti et al., 2019). For example, mothers who are educated about the importance of regular growth checks are more likely to participate actively in monitoring their children's growth, thereby reducing the incidence of wasting (Rahmad et al., 2022). Additionally, community health initiatives that empower mothers and fathers to take an active role in their children's health have been shown to enhance growth monitoring practices.

The effectiveness of growth monitoring is also contingent upon the availability of health services and the socio-economic context in which families operate. In rural areas, where access to health facilities may be limited, the incidence of wasting tends to be higher due to inadequate growth monitoring and nutritional support. Conversely, urban areas often have better access to health services, which facilitates regular growth monitoring and consequently helps in reducing malnutrition rates (Simbolon et al., 2019).

Furthermore, the integration of technology in growth monitoring, such as mobile applications and digital health records, has shown promise in improving the frequency and accuracy of growth assessments (Ernawati et al., 2021). These tools can assist health workers and caregivers in tracking growth patterns over time, making it easier to identify deviations from expected growth trajectories and respond promptly to potential issues (Buzhardt et al., 2022).

Relationship between immunization status and the incidence of wasting in toddlers

This study shows that toddlers who have complete basic immunization status also experience wasting nutritional status. Basic immunization status is part of the health service variables which is an indirect contributing factor to the incidence of wasting. However, this immunization status has a relationship with the history of infectious diseases in toddlers, which is one of the direct causal factors of wasting.

Research has shown that vaccinated children are less likely to suffer from severe malnutrition, including wasting. For instance, a study in Ethiopia found that the odds of acute malnutrition were 62% lower among children who received vaccinations appropriate for their age compared to those who did not (Bekele et al., 2021). This suggests that immunization plays a protective role against diseases that can lead to malnutrition. Similarly, a study conducted in Tanzania indicated that children with incomplete vaccination schedules had a higher likelihood of experiencing severe malnutrition, underscoring the importance of timely immunizations in preventing health complications (Ahmed et al., 2016).

The immunological benefits of vaccinations extend beyond immediate disease prevention; they also contribute to overall nutritional health. Vaccines help reduce the incidence of infections such as measles and pneumonia, which are known to exacerbate malnutrition (Prendergast, 2015). For example, the measles vaccine has been associated with reduced rates of diarrhea and respiratory infections, both of which can lead to wasting in children (Bawankule et al., 2017). Furthermore, malnourished children often exhibit impaired immune responses to vaccines, which can result in lower vaccine efficacy and increased susceptibility to infections (Rytter et al., 2014). This creates a vicious cycle where malnutrition leads to poor immunization outcomes, further increasing the risk of wasting.

Maternal education and socio-economic factors also play a critical role in the relationship between immunization and wasting. Educated mothers are more likely to ensure their children receive complete vaccinations and adopt better feeding practices, which can mitigate the risk of malnutrition (Islam et al., 2019). A study in Bangladesh highlighted that maternal education positively influences child immunization rates and nutritional status, suggesting that interventions aimed at improving maternal knowledge could enhance both vaccination coverage and nutritional outcomes.

Moreover, the context of healthcare access significantly impacts immunization rates and, consequently, the nutritional status of children. In settings where healthcare services are limited, children are less likely to receive vaccinations, leading to higher incidences of preventable diseases and subsequent malnutrition (Ogbu et al., 2022). Therefore, improving healthcare infrastructure and access to immunization services is essential for reducing the incidence of wasting among toddlers.

Relationship between family income and the incidence of wasting in toddlers

Nutrition problems in children are influenced by socioeconomic factors, one of which is the level of family income. Income is the amount of income earned by a family in one month to meet the daily needs of its family members (Husnah, 2021). In this study, researchers determined the level of family income based on the regional minimum wage (UMR) of Takalar Regency in 2021, which is IDR 3,165,876.

In Polombangkeng Utara sub-district, there were 130 households with low incomes, and only 16 households with high incomes. The large number of low-income households is certainly related to the occupation of the parents, especially the father's occupation. In this study, the father's occupation was predominantly a farmer and self-employed. In addition, it is also known that the majority of wasting toddlers are in families with low income, namely 69 toddlers. There were only 13 toddlers with wasting who came from high-income families. In this study, there were 13 (81.3%) toddlers who were wasting but their economic income was high. This is because there are other factors that cause toddlers to experience wasting, namely non-optimal breastfeeding, nutrient intake, maternal education, diarrhea and respiratory tract morbidity, sanitation channels and rural residence.

Several studies have established a clear association between low family income and increased rates of wasting in toddlers. For instance, research conducted in Indonesia found that socioeconomic status, including family income, is significantly related to the nutritional status of children under five, with poverty being a major risk factor for malnutrition, including wasting. This finding is supported by a study in Aceh, Indonesia, which indicated that families with lower income levels had a higher prevalence of malnutrition among their children (Rahmad et al., 2020). The economic constraints faced by low-income families often limit their ability to provide sufficient and nutritious food, leading to increased susceptibility to wasting (Nepali et al., 2020).

Moreover, the impact of family income on nutritional status is compounded by other factors such as maternal education and access to healthcare services. Families with higher income levels are generally better positioned to afford healthcare and nutrition education, which can significantly improve child health outcomes. For example, a study highlighted that maternal education and family

income are interrelated, with educated mothers more likely to ensure their children receive adequate nutrition and healthcare (Rahmad et al., 2020). This relationship underscores the importance of addressing both economic and educational disparities to combat wasting in toddlers effectively.

From an Islamic perspective, fulfilling basic needs, including adequate and nutritious food, is a responsibility that is highly emphasized. Islam teaches the importance of maintaining the health and well-being of every individual, including children, as a mandate from Allah SWT. The family, as the smallest unit in society, has an important role in ensuring that every member, especially children, receive their basic rights, including adequate food. The Qur'an emphasizes the importance of consuming halal and *thayyib* (good) food. Allah SWT says in Surah Al-Baqarah/2:168 which translated:

> *"O mankind, eat from whatever is on earth (that is) lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy".*

This verse emphasizes that providing halal and nutritious food for children is part of parents' responsibility in maintaining the health and well-being of the family.

This study showed a significant association between family income and the incidence of wasting in under-fives, indicating that families with lower incomes may face greater challenges in providing adequate food intake for their children. In the Islamic context, the concepts of social welfare and economic justice are strongly emphasized. Islam encourages equitable distribution of wealth and emphasizes the importance of zakat, infaq and sadaqah as mechanisms to help underprivileged families meet their basic needs, including the nutritional needs of their children. Islam strongly encourages its followers to help each other in meeting basic needs, especially for those who are less well-off. In the Qur'an Surah Al-Baqarah/2:177, it is stated:

> *"Righteousness is not that you turn your faces toward the east or the west, but [true] righteousness is [in] one who believes in Allah, the Last Day, the angels, the Book, and the prophets and gives wealth, in spite of love for it, to relatives, orphans, the needy, the traveler, those who ask [for help], and for freeing slaves; [and who] establishes prayer and gives zakah…".*

This verse shows the importance of zakat, infaq and sadaqah as a means to help poor families so that they can fulfill the nutritional and health needs of their children. In addition, it is important to continue educating the community on the importance of maintaining children's health and nutrition, in line with Islamic teachings that advocate the maintenance of both body and mind. Families are reminded of their responsibility in paying special attention to the intake of halal and good (*thayyib*) food for children, in accordance with the guidance of the Qur'an and Hadith. Thus, the integration of Islamic values in efforts to address the problem of wasting can provide a more holistic and sustainable solution. In a Hadith narrated by Hadith Abu Daud No. 1692, the Messenger of Allah (SAW) said:

> *"It is sufficient sin for a person to forsake whom he supports"*

This hadith emphasizes the importance of the role of parents in nurturing and looking after their children, including in terms of providing adequate and healthy nutritional intake.

Limitations of this study include a limited sample of 146 under-fives, which may not be representative enough for broader generalization. This study also did not analyze other factors such as environmental factors, parenting patterns, and parental education that may influence the incidence of wasting. In addition, the non-longitudinal study design limits understanding of the dynamics of wasting over time and the effectiveness of interventions. The limited focus on economic factors, while finding a significant association between family income and wasting, does not adequately explain the role of other aspects such as food security and access to health services. Measurement of variables such as growth monitoring, immunization status, and food safety may also not cover all relevant aspects to comprehensively understand the incidence of wasting.

CONCLUSIONS

The study proved that there was a significant relationship between family income and the incidence of wasting. However, no significant relationship was found between growth monitoring, immunization status, and food security on the incidence of wasting. Therefore, in an effort to overcome the problem of wasting in toddlers, more attention needs to be given to providing adequate food intake and conducting specific and sensitive interventions on an ongoing basis in handling nutritional problems. Parents are expected to increase their knowledge and awareness of the importance of balanced nutritional intake for their children, especially during the growth period of toddlers. Health workers are advised to strengthen education and socialization programs on the importance of growth monitoring and immunization for under-fives. In addition, health services should focus more on a comprehensive approach in supporting low-income families by providing better access to nutrition and health services.

Researchers are expected to continue this study with a broader scope, including analysis of other factors that may influence the incidence of wasting, such as environmental factors, parenting patterns, and parental education. Longitudinal studies are also needed to understand the dynamics of wasting incidence over time and the effectiveness of the interventions implemented.

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AUTHORS' CONTRIBUTIONS
Syamsul Alam, designed the study, formulated the concept, revised the manuscript, and read and approved the final manuscript. Iriyanti Harun reviewed, read and approved the final manuscript. Rezki Nurfatmi wrote the manuscript, acquired the data, analyzed the data. All authors performed the field work.

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COMPETING INTERESTS
The author(s) declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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